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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,402	07/28/2003	Brian K. Tanner	PANA-01066US2 SRM/TAW	7213
23910	7590	08/11/2004	EXAMINER MILLER, PATRICK L	
FLIESLER MEYER, LLP FOUR EMBARCADERO CENTER SUITE 400 SAN FRANCISCO, CA 94111			ART UNIT 2837	PAPER NUMBER

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,402

Applicant(s)

TANNER, BRIAN K.

Examiner

Patrick Miller

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8,10,11 and 35 is/are allowed.
- 6) ☒ Claim(s) 1-7,12-20,22 and 23 is/are rejected.
- 7) ☒ Claim(s) 9,21 and 24-34 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09122003.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Double Patenting

1. Applicant is advised that should claim 5 be found allowable, claim 6 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Objections

2. Claims are 1-7, 9, 12-18, 23, 24-35 are objected to because of the following informalities: See bullets below. Appropriate correction is required.
 - Claim 1 recites, “the spin-up parameters.” Lack of antecedent basis. Delete “the.”
 - Claim 2 recites, “the resistance.” Lack of antecedent basis. Change “the” to “a.”
 - Change line 3 to read as follows: “a measurement circuit to measure a resistance of a coil of the VCM in order to determine the temperature of the coil of the VCM, the temperature determination being provided to the processor.”
 - Claim 4 recites, “the resistance.” Change “the” to “a.”
 - Claim 7 recites, “the temperature estimate.” Lack of antecedent basis for this term. “Estimate” is not disclosed in claim 1.
 - Claim 9 recites, “wherein time for the spin-up.” Insert “a” between “wherein” and “time.”
 - Claim 12 recites, “the temperature.” Lack of antecedent basis. Change “the” to “a.”
 - Claim 12 recites, “the spin-up parameters.” Lack of antecedent basis. Delete “the.”

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- Claim 18 recites, “the spindle motor speed.” Lack of antecedent basis. Change “the” to “a.”
- Claim 18 recites, “the temperature estimate.” Lack of antecedent basis for this term. “Estimate” is not disclosed in claim 12.
- Claim 23 recites, “the spindle motor speed.” Lack of antecedent basis. Change “the” to “a.”
- Claim 23 recites, “the temperature estimate.” Lack of antecedent basis for this term. “Estimate” is not disclosed in claim 19.
- Claim 23 recites, “the spindle motor controller.” Lack of antecedent basis. Change “the” to “a.”
- Change claim 24 to “a signal to measure the resistance” (line 11).
- Claim 24 recites, “the spindle motor speed” (line 14). Change “the” to “a.”
- Claim 25 recites, “a decrease.” Change “a” to “the.”
- Claim 26 recites, “a signal” (line 4). Please distinguish this signal from the signal to the spindle motor driver in claim 24 (line 15).
- Claim 26 recites, “a decrease.” Change “a” to “the.”
- Claim 27 recites, “a signal to the spindle motor driver” (lines 2 and 3). Please distinguish this signal from the signal to the spindle motor driver in claim 24 (line 15).
- Claim 27 recites, “a decrease.” Change “a” to “the.”
- Claim 31, change “causing” to “cause” (line 3).
- Claim 32 recites, “a signal to measure the resistance” (line 8). Change “the” to “a.”
- Claim 33 recites, “a decrease in the temperature estimate.” Change “a” to “the.”

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- Claim 34 recites, “a decrease in the temperature estimate” (line 24 of claim). Change “a” to “the.”

Specification

3. The specification is objected to because it does not support claim 16. Specifically, the specification discloses providing control code to a spindle motor *controller*.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 5, 6, 7, 19, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schirle (6,055,120).
 - With respect to claims 1 and 19, Schirle discloses a disk drive with a voice coil motor (VCM) (Fig. 2, #27), and a spindle motor (Fig. 2, #21), the disk driver comprising: a processor (Fig. 2, #28) configured to determine spin-up parameters of the spindle motor based on a temperature of the VCM (abstract), where the spin-up parameter is start-up failure time, and failure time is dependent on the spindle and drive design: its power outputs, thermal capacitance, and thermal conductivities (col. 4, lines 55-59). Additionally, the temperature sensor of Schirle (Fig. 2, #50) detects the ambient temperature inside the disk drive module (col. 4, lines 35-46). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that, since

the voice coil motor emits heat, the ambient temperature sensed by the temperature sensor is comprised, in part, from the temperature of the VCM.

- With respect to claims 5, 6, and 22, Schirle discloses the spin-up parameters include spin-up time (abstract, col. 2, lines 14-28, col. 4, lines 47-59; failure timing or time-out period).
- With respect to claims 7 and 23, Schirle discloses the step of setting a time out period after which the spindle motor is turned off if it has not reached a desired operational velocity (col. 4/5, lines 66-67/1-13), wherein the time out period is increased with a decrease in the temperature (col. 4, lines 31-34; increased time-out period when the temperature is low).

5. Claims 2-4, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schirle (6,055,120) as applied to claims 1 and 19 above, and further in view of Wallis (5,268,804).

- With respect to claims 2-4 and 20, Schirle does not disclose a means for determining the temperature of the VCM comprising a processor coupled to a coil winding of the VCM (claims 2 and 20), and determining the temperature comprises measuring the resistance of the coil, and a measurement circuit/device, that measures said resistance and provides the determined temperature to the processor (claims 3 and 4).
- With respect to claims 2-4 and 20, Wallis discloses a means for determining the temperature of a VCM, comprises a processor, and measures the resistance of a coil of the VCM (col. 4, lines 47-63; Fig. 1, 'VCM Temperature' is sent to #4, which is in a processor. Additionally, the processor is coupled to the spindle motor and coupled to the coil via the temperature measurement means). Furthermore, the resistance is measured

by a measurement circuit/device, and the determined temperature of the VCM, which is derived from the resistance of a coil of the VCM, is sent to the processor (Fig. 1, 'VCM Temperature' is sent to #4, which is in a processor. Additionally, the processor is coupled to the coil via the temperature measurement device/circuit/means). Wallis measures the temperature of the VCM as described to increase the time taken to move the data head between given positions if the temperature of the VCM is above a predetermined value (abstract). This provides the advantage of reducing the heat built up in the mechanism moving the data without reducing the data access time (cols. ½, lines 63-68/1-5).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that a measurement circuit is used to measure the resistance of a coil of the VCM to determine the temperature of the VCM, upon which the measured temperature is sent to the processor of Schirle, thus increasing the time taken to move the data head (of Schirle) between given positions, and providing the advantage of reducing the built-up heat in the mechanism moving the data without reducing the data access time, as taught by Wallis.

6. Claims 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schirle (6,055,120) in view of Wallis (5,268,804).

- With respect to claim 12, Schirle discloses a means for determining the spin-up parameters for the spindle motor based on the temperature of the VCM (abstract), where the spin-up parameter is start-up failure time, and failure time is dependent on the spindle and drive design: its power outputs, thermal capacitance, and thermal conductivities (col.

4, lines 55-59). Additionally, the temperature sensor of Schirle (Fig. 2, #50) detects the ambient temperature inside the disk drive module (col. 4, lines 35-46). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that, since the voice coil motor emits heat, the ambient temperature sensed by the temperature sensor is comprised, in part, from the temperature of the VCM.

- With respect to claims 12-14, Schirle does not disclose a means for determining the temperature of the VCM and determining the temperature comprises measuring the resistance of a coil of the VCM, and a measurement circuit that measures said resistance and provides the determined temperature to the processor (claim 14), and the processor is coupled to the coil winding of the VCM (claim 13).
- With respect to claims 13, and 14, Wallis discloses a means for determining the temperature of a VCM by measuring the resistance of a coil of the VCM (col. 4, lines 47-63). Furthermore, the resistance is measured by a measurement circuit/device, and the determined temperature of the VCM, which is derived from the resistance of a coil of the VCM, is sent to the processor (Fig. 1, 'VCM Temperature' is sent to #4, which is in a processor. Additionally, the processor is coupled to the coil via the temperature measurement circuit). Wallis measures the temperature of the VCM as described to increase the time taken to move the data head between given positions if the temperature of the VCM is above a predetermined value (abstract). This provides the advantage of reducing the heat built up in the mechanism moving the data without reducing the data access time (cols. ½, lines 63-68/1-5).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that a measurement circuit is used to measure the resistance of a coil of the VCM to determine the temperature of the VCM, upon which the measured temperature is sent to the processor of Schirle, thus increasing the time taken to move the data head (of Schirle) between given positions, and providing the advantage of reducing the built-up heat in the mechanism moving the data without reducing the data access time, as taught by Wallis.
- With respect to claim 15, Schirle discloses the means for determining spin-up parameters comprises a spindle motor controller (Fig. 2, #28 controls #21).
- With respect to claim 16, Schirle discloses a processor that provides control code to a spindle motor driver (col. 3, lines 51-52; Fig. 2, #31). Note that the Examiner has interpreted “code” to mean a signal, since signals are configured in a system so that they can be read by specific components, e.g. coded with a specific voltage, frequency, etc. Also note that the specification discloses providing a control code to a spindle motor controller.
- With respect to claim 17, Schirle discloses the spin-up parameters include spin-up time (abstract, col. 2, lines 14-28, col. 4, lines 47-59; failure timing or time-out period).
- With respect to claim 18, Schirle discloses the step of setting a time out period after which the spindle motor is turned off if it has not reached a desired operational velocity (col. 4/5, lines 66-67/1-13), wherein the time out period is increased with a decrease in the temperature (col. 4, lines 31-34; increased time-out period when the temperature is low).

Allowable Subject Matter

7. Claims 8, 10, 11, and 35 are allowed. Additionally, claim 9 would be allowable once the minor informalities are corrected.
 - With respect to claims 8 and 35, Iida (JP 2000-222815 A) discloses measuring the resistance of a coil of a VCM to determine a temperature estimate, and controlling the speed of a spindle motor based on said temperature estimate. However, neither Iida, nor other Prior Art disclose controlling the spindle motor during *spin-up* based on the measured temperature of a VCM.
8. Claims 24-34 are allowable once the minor informalities are corrected.
 - With respect to claims 8, 32, and 34, Iida (JP 2000-222815 A) discloses measuring the resistance of a coil of a VCM to determine a temperature estimate, and controlling the speed of a spindle motor based on said temperature estimate. However, neither Iida, nor other Prior Art disclose controlling the spindle motor during *spin-up* based on the measured temperature of a VCM.
9. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and once the minor informalities are corrected.
 - With respect to claim 21, the Prior Art does not disclose controlling spin-up parameters of a spindle motor based on the determined temperature of a VCM, where the temperature is determined by a resistance measurement of a coil of the VCM.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

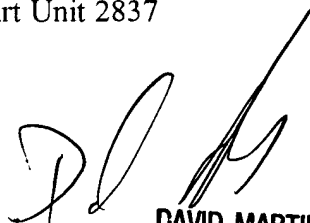
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Miller
Examiner
Art Unit 2837

pm
July 27, 2004


DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2837